

# PATENT ABSTRACTS OF JAPAN

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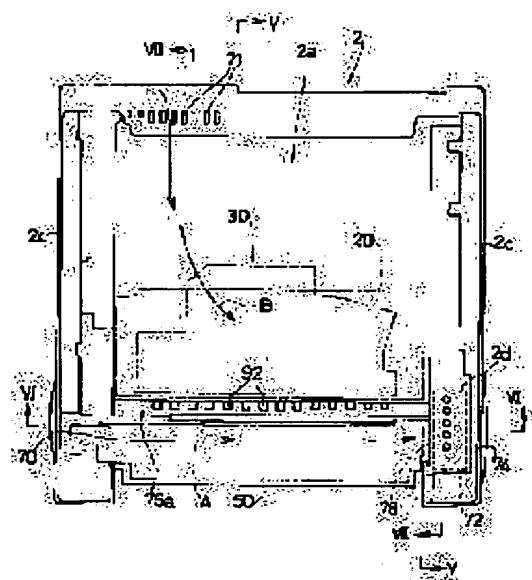
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## (54) COOLING DEVICE FOR IMAGE FORMING DEVICE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To improve the performance for cooling a heat source such as fixing unit with one cooling fan, and to reduce ht production cost, by utilizing the structure of the main body case of a printer.

**SOLUTION:** An upper surface plate part 76a for a ventilating duct horizontally intersecting a main body case 2 so that a processing unit 20 may be separated from the fixing unit 30 thermally fixing a toner image transferred to paper is formed in a state where is cross section ids nearly inverted V-shaped and integrally and successively provided at a part near to the front part of the main frame part 2a of the main body case 2. By driving the cooling fan 72 in a cooling fan housing part, air sucked from a 1st air inflow port 70 on one side of the main body case 2 is discharged to the outside of the device from an air outflow port 74 on the other side of the main body case 2 through the cooling fan housing part from a transverse aperture 78 along the upper surface of the fixing unit 50. The air is sucked also from a 2nd air outflow port 71 on the back surface of the main body case 2, made to pass the upper and the lower surfaces of the processing unit 20 and drawn in the aperture 78.



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**CLAIMS**

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[Claim(s)]

[Claim 1] The process unit which has the photo conductor with which an electrostatic latent image is formed at least, and the developer which forms a toner image in this photo conductor, In the image formation equipment which comes to hold the exposure unit for forming a latent image in a photo conductor, the fixing unit which carries out heating fixing of the toner image imprinted by the form, a power supply section, and various substrates in a body case An airstream inlet port is formed in the at least 1 side of said body case, an airstream outlet is formed in a side besides a body case, and the stowage for fans for cooling is prepared near this airstream outlet. In said body case The air duct of the shape of oblong [ which is located between said process units and fixing units, and is prolonged in the passage direction of a form, and the crossing direction, and separates the arrangement section of said substrate up and down ], The septum which separates the flank of said both units and the stowage for fans for cooling is formed. The cooling system in the image formation equipment characterized by constituting so that it may emit outside the plane from said airstream outlet through sideways opening which was made to pass through the upper part of said fixing unit, and drilled the air inhaled from said airstream inlet port in said septum, and said stowage for fans for cooling.

[Claim 2] The cooling system in the image formation equipment according to claim 1 with which air inhaled from the airstream inlet port formed in the rear face of said body case is characterized by preparing the circulation way which flows in the upper part and the lower part of said process unit, respectively.

[Claim 3] In a body case, the dashboard with which the upper part of each of said substrate and the lower part of said process unit are divided is formed. The air inhaled from the airstream inlet port of the rear face of said body case forms in the flat surface of each of said substrate the circulation way which flows as \*\*\*\*. The cooling system in the image formation equipment according to claim 1 or 2 characterized by constituting so that it may emit outside the plane from said airstream outlet through said stowage for fans for cooling from this circulation way.

[Claim 4] The cooling system in the image formation equipment according to claim 3 characterized by constituting so that it may flow on the circulation way from the low voltage power supply section where the air which prepared the bottom plate of a wrap sake and was inhaled from the airstream inlet port of the rear face of said body case has arranged the lower part of said body case to the posterior part approach part within a body case to said substrate.

[Claim 5] The cooling system in the image formation equipment according to claim 1 to 4 characterized by being constituted so that the air inhaled from between the lower part of said fixing unit and the notches formed in the front face of a body case may be attracted inside an aeration duct through the inlet drilled in the front face of said air duct.

[Claim 6] The cooling system in the image formation equipment according to claim 1 to 5 characterized by constitute the air which have arranged the diaphragm which drill an air hole and divide the clearance between the front face of said process unit , and the rear face of an aeration duct into the lower approach part up and down in the upper part [ air hole / this ] in the rear face of said aeration duct , and be inhaled from the airstream inlet port of the rear face of said body case so that it may be drawn in inside an aeration duct .

[Claim 7] The cooling system in the image formation equipment according to claim 1 to 6 characterized by stretching the heat-reflecting plate for intercepting the radiant heat from a fixing unit in the front face of said aeration duct.

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the structure of the cooling system in image formation equipments, such as a copying machine, and facsimile or a laser beam printer.

[0002]

[Description of the Prior Art] The feed unit to which this kind of image formation equipment feeds the form for image formation conventionally, The process unit which builds in the developer which forms a toner image in a photo conductor drum or this, The drive motor which drives the rotation components in the exposure unit for forming an electrostatic latent image in a photo conductor drum, the fixing unit which carries out heating fixing of the toner image imprinted by the form, and these units and the transmission gearing, and the pan are equipped with the power supply section for a control equipment.

[0003] And in order that it may be equipped with these units, a mechanical component, a power supply section, etc. in the product made from a metal plate, or the body case made of synthetic resin and they may cool generation of heat from the fixing unit of said power supply section, a drive motor, and a heating type etc., the fan for cooling is stationed in said body case, and he inhales the air for cooling from the outside of a body case from one airstream inlet port, and is trying to emit outside the plane through air emission opening of another side in the former.

[0004]

[Problem(s) to be Solved by the Invention] However, since it becomes difficult to make the wind from one fan for cooling go in two or more directions when arranged in the location where said two or more heat sources are in the location left within the body case, and height crosses, The fan for cooling must be installed for every part near each heat source. Especially the exhaust heat from the large fixing unit of a heating value Since it had to emit outside the plane by the fan for cooling according to individual, while the manufacturing cost increased, the space for stationing each fan for cooling was needed, and there was a problem that equipment was enlarged.

[0005] This invention is made that these problems should be solved and aims at offering the cooling system which can cool efficiently the heat source of two or more parts by one fan for cooling.

[0006]

[Means for Solving the Problem] In order to attain this purpose, the cooling system of the image formation equipment of invention indicated to claim 1 The process unit which has the photo conductor with which an electrostatic latent image is formed at least, and the developer which forms a toner image in this photo conductor, In the image formation equipment which comes to hold the exposure unit for forming a latent image in a photo conductor, the fixing unit which carries out heating fixing of the toner image imprinted by the form, a power supply section, and various substrates in a body case An airstream inlet port is formed in the at least 1 side of said body case, an airstream outlet is formed in a side besides a body case, and the stowage for fans for cooling is prepared near this airstream outlet. In said body case The air duct of the shape of oblong [ which is located between said process units and fixing units, and is prolonged in the passage direction of a form, and the crossing direction, and separates the arrangement section of said substrate up and down ], The septum which separates the flank of said both units and the stowage for fans for cooling is formed. It constitutes so that it may emit outside the plane from said airstream outlet through sideways opening which was made to pass through the upper part of said fixing unit, and drilled the air inhaled from said airstream inlet port in said septum, and said stowage for fans for cooling.

[0007] Moreover, invention indicated to claim 2 prepares the circulation way where the air inhaled from the airstream inlet port formed in the rear face of said body case flows in the upper part and the lower part of said process unit, respectively in the cooling system of the image formation equipment indicated to claim 1. In a cooling system [ in / in invention according to claim 3 / image formation equipment according to claim 1 or 2 ] in a body case The dashboard with which the top face of each of said substrate and the lower part of said process unit are divided is formed. The air inhaled from the airstream inlet port of the rear face of said body case forms in the flat surface of each of said substrate the circulation way which flows as \*\*\*\*, and through said stowage for fans for cooling, it constitutes from this circulation way so that it may emit outside the plane from said airstream outlet.

[0008] And in the cooling system in image formation equipment according to claim 3, invention according to claim 4 is constituted so that it may flow on the circulation way from the low voltage power supply section where the air which prepared the bottom plate of a wrap sake and was inhaled from the airstream inlet port of the rear face of said body case has arranged the lower part of said body case to the posterior part approach part within a body case to said substrate. Furthermore, in the cooling system in image formation equipment according to claim 1 to 4, invention according to claim 5 is constituted so that the air inhaled from between the lower part of said fixing unit and the notches formed in the front face of a body case may be attracted inside an aeration duct through the inlet drilled in the front face of said air duct.

[0009] In a cooling system [ in / in invention according to claim 6 / image formation equipment according to claim 1 to 5 ] in the rear face of said aeration duct Drill an air hole in the lower approach part, and the diaphragm which divides the clearance between the front face of said process unit and the rear face of an aeration duct up and down in the upper part [ air hole / this ] is arranged. The air inhaled from the airstream inlet port of the rear face of said body case is constituted so that it may be drawn in inside an aeration duct.

[0010] Invention according to claim 7 stretches the heat-reflecting plate for intercepting the radiant heat from a fixing unit in the front face of said aeration duct in the cooling system in image formation equipment according to claim 1 to 6.

[0011]

[Embodiment of the Invention] Next, the operation gestalt which materialized this invention to the laser-beam-type printer is explained based on a drawing. Drawing 1 is the perspective view of the printer as image formation equipment, and drawing 2 is the outline sectional side elevation of a laser beam printer. As shown in drawing 1 and drawing 2 R> 2, a printer 1 The body case 2 made of synthetic resin, and the 1st medium tray unit 3 and the 2nd medium tray unit 4 prepared in the top-face posterior part side of this body case 2 free [ attachment and detachment ], The form conveyance device 14 established in the body case 2, and the scanner unit 20 as an exposure unit, Since a process unit 30, the fixing unit 50, said form conveyance device 14 and process unit 30, and fixing unit 50 grade are driven, it consists of cooling systems later mentioned with an including-drive-motor and gear train drive unit (not shown).

[0012] Moreover, the covering structure 60 of having the wrap top covering 61 and the paper output tray 65 in which an aperture is ahead possible is established possible [ closing motion ] in the upper part of said fixing unit 50 and process unit 30 on the top face of the body case 2. It is the configuration which can fold up and cover a paper output tray 65 at the top-face side of the top covering 61 in not using it. The 1st medium tray unit 3 is equipped with the body 5 of a tray, the tray covering 6 connected with this body 5 of a tray possible [ disconnection ], the form support plate 7 supported pivotably free [ rotation ] by the body 5 of a tray, the feed roller 8 which power transfer is carried out and rotates from the above-mentioned drive unit, separation pad 8a, and the energization spring 9 grade which energizes the lower limit side of the form support plate 7 in the feed roller 8 direction. If the tray covering 6 is opened, according to a release device (not shown), the form support plate 7 resists the energization force of the energization spring 9, moves in the direction of a bottom of the body 5 of a tray, and will be in the condition which can be set about a form on the form support plate 7.

[0013] Since the configuration of the 2nd medium tray unit 4 is almost the same as that of the structure of the 1st medium tray unit 3 except for the tray covering 10, it attaches the sign same about the same configuration, and the explanation is omitted. In addition, the manual paper feed of the form for manual bypass can be inserted and carried out from interior of proposal 10a in the tray covering 10. The sliding plate 15 to which the form conveyance device 14 is extended in the direction of the upper part of the process-unit unit 30 from the lower limit of said 1st medium tray unit 3 and the 2nd medium tray unit 4, It has 18 and 19. a feed roller pair -- 16, 17,

and a resist roller pair -- the feed roller 8 and separation pad 8a separate one sheet at a time the tip side of the form (not shown) set where a laminating is carried out to the form support plate 7 in the 2nd medium tray unit 4 -- having -- a resist roller pair, although conveyed by 18 and 19 After carrying out the resist of the tip of a form in 18 and 19, it is conveyed in a process unit 30 through conveyance way 15b. the form from the 1st medium tray unit 3 -- a feed roller pair -- conveyance way 15a of the top face of 16 and 17 to the sliding plate 15 -- passing -- a resist roller pair -- After the form which had the image formed in a front face of a toner by this process unit 30 has an image fixed with the heating roller 51 and the press roller 52 of the fixing unit 50, it is discharged by the paper output tray 65.

[0014] The scanner unit 20 as an exposure unit arranges a laser light-emitting part, the polygon mirror 21, a lens 23, a reflecting mirror 22, and 24 grades to the inferior-surface-of-tongue side of the upper support plate 25 made of synthetic resin, passes the wrap glass plate 26 for the oblong scanner hole drilled so that it might extend along with the axis of the photo conductor drum 32 in said upper support plate 25, and it is constituted so that a laser beam may be irradiated and may be exposed to the peripheral face of the photo conductor drum 32 in a process unit 30.

[0015] As shown in drawing 2, said process unit 30 The developer which has the electrification machines 40, such as a scorotron mold arranged under the photo conductor drum 32, and the imprint roller 33 which contacted the top face and the photo conductor drum 32, the developing roller 34 arranged to the upstream rather than the photo conductor drum 32 in the feed direction, and the toner feed roller 36, It consists of the cleaning roller 35 grade arranged to the downstream rather than the developer (toner) feed zone 37, i.e., a removable toner cartridge, furthermore arranged to the upstream, and the photo conductor drum 32. It is cartridge-ized by including in case 30a made of synthetic resin, and when the peripheral face of the photo conductor drum 32 scans a laser beam from said scanner unit 20 in the electrification layer formed with the electrification vessel 40, an electrostatic latent image is formed. After the developer in said toner cartridge 37 (toner) is stirred with an agitator body 38 and emitted, it is supported by the peripheral face of a developing roller 34 through a feed roller 36, and the thickness of a toner layer is regulated by the blade 39. When the developer supplied from the developing roller 34 adheres, it develops the electrostatic latent image of the photo conductor drum 32, and it is imprinted by the form passing through between the imprint roller 32 and the photo conductor drums 32. And the toner which remained on the photo conductor drum 32 is recovered by the cleaning roller 35.

[0016] Next, the configuration of the body case 2 and an air-cooled cooling system is explained further in full detail, referring to drawing 1 and drawing 3 - drawing 9. The body case 2 A top face to the scanner unit 20, and a process unit 30, Respectively the fixing unit 50 Mainframe section 2a made of synthetic resin with which it can equip free [ attachment and detachment ], Dashboard 2b of the pars basilaris ossis occipitalis of this mainframe section 2a, and the external surface of 4 rounds (order and right-and-left both sides) of mainframe section 2a Outside covering section 2c made of wrap synthetic resin c, It becomes 2d of control-panel sections which project upward on the right-hand side of said mainframe section 2a from receipt hollow 2e of the letter of disconnection under for containing the drive unit which is not illustrated etc., and these are formed with injection molding etc. in one.

[0017] Drawing 3 is the outline top view of the body case 2, and drawing 4 is the outline bottom view of the body case 2. Outside covering section 2c is formed so that it may form successively mostly on the outside of 4 rounds of rectangle-like top-face disconnection core box-like main frame section 2a. plane view -- the body case 2 -- it is mostly located in a center section -- The 1st airstream inlet port 70 and the 2nd airstream inlet port 71 where the air for cooling is inhaled are drilled in the left lateral and back side face of outside covering section 2c. The lower part of 2d of said control-panel sections is formed in the stowage 73 (refer to drawing 6) for cooling fans which contains a cooling fan 72 sideways, and the airstream outlet 74 is drilled in the side besides outside covering section 2c which confronts each other near this stowage 73 for cooling fans.

[0018] Moreover, it is made open for free passage so that the edges of the air duct 76 of the shape of oblong [ which is prolonged in the passage direction of a form and the direction which intersects perpendicularly ] may be formed successively to the septum 75 by which mainframe section 2a and said stowage 73 for cooling fans are separated (on the right-hand side of drawing 3) and air can circulate through the free passage hole 77 to it. Moreover, two or more sideways openings 78 which are open for free passage to mainframe section 2a and said stowage 73 for cooling fans are drilled by said septum 75 (refer to drawing 6).

[0019] With said scanner unit 20, to the upper part a process unit 30 It arranges in the plane view \*\*\*\* center section of mainframe section 2a of the shape of a top-face disconnection box in the body case 2. Top-face Itabe 76a of the air duct 76 of the shape of oblong [ said ] is formed in the shape of [ of cross-section facing down ] abbreviation for V characters (refer to drawing 3 and drawing 5 ). It is located between the process units 30 and the fixing units 50 which face-plate section 76a besides arranges to the top-face side of mainframe section 2a. The radiant heat from the heating roller 51 which can be set fixing unit 50 is directly transmitted to a process-unit 30 side ( drawing 2 , drawing 3 , drawing 5 , and R> drawing 8 8 reference). In addition, as shown in drawing 5 and drawing 8 , between the lower limits of top-face Itabe 76a of the letter of the cross-section facing-down abbreviation for V characters are formed successively with a dashboard 91, and the part surrounded by these members serves as an air duct 76, and it is constituted so that a cooling wind may pass through the interior in the direction of an arrow head shown in drawing 6 through the free passage hole 77.

[0020] In addition, the oblong-like notch 88 is suitably formed in the front face of the body case 2 for the halfway section of the width of face of the right-and-left both-sides straight side covering die length (refer to drawing 6 and drawing 8 ). The air attracted from the front face of the body case 2 passes the lower part of said fixing unit 50, and it is constituted so that it may be drawn in inside the aeration duct 76 through two or more inlets 89 drilled in the front face of upper surface part plate 76a in said air duct 76.

[0021] Furthermore, in the front face (side which stands face to face against the rear face of the fixing unit 50) of said upper surface part plate 76a, the area of most except said two or more inlets 89 is stretched so that it may cover by the heat-reflecting plates 90, such as aluminum foil, ( drawing 6 , drawing 8 , and R> drawing 9 9 reference). and in the rear face of upper surface part plate 76a of said aeration duct 76 Drill an air hole 92 in the lower approach part, and the diaphragm 93 of the shape of oblong [ of the sponge which divides the clearance between the front face of said process unit 30 and the rear face of the aeration duct 76 up and down in the upper part / air hole / 92 / this ] is arranged. It is constituted so that the inhaled air may be attracted inside the aeration duct 76 through the lower part (clearance between the top faces of the scanner unit 20) of a process unit 30 from the 2nd airstream inlet port 71 of the rear face of said body case 2.

[0022] From dashboard section 2b of said mainframe section 2a in the body case 2, moreover, below To the right-hand side posterior part approach part of the bottom view of the body case 2 shown by drawing 4 , the low voltage power supply substrate 80 as a low voltage power supply section In the left-hand side posterior part approach part of said bottom view, the Maine substrate 81 for control again In the left-hand side center-section approach part of said bottom view, arrange the junction substrate 82, and the high voltage power supply substrate 83 is further arranged, respectively in a before [ said bottom view ] approach part (almost lower part location [ Air duct 76 ] ). Each of these substrates 80, 81, 82, and 83 are fixed to the stay section 84 which protruded downward in one from said dashboard section 2b etc. on a screw etc. (refer to drawing 5 - drawing 7 ), and the proper airstream path is formed between dashboard section 2b and the top face of each substrates 80, 81, 82, and 83.

[0023] And the air hole 86 is drilled in the posterior wall of stomach 85 started from the posterior part of said dashboard section 2b to the upper part (refer to drawing 5 ). Furthermore, a clearance is suitably opened in the lower limit of the body case 2 with the inferior surface of tongue of each of said substrates 80, 81, 82, and 83, and the bottom plates 87, such as metal, are being fixed to it on the screw (refer to drawing 5 - drawing 7 ).

Next, the cooling operation by the air cooling cooling system by said configuration is explained. If the power source of a printer 1 is turned on, an electric power supply is carried out to each substrates 80, 81, 82, and 83, electrical-potential-difference impression will be carried out and preheating will be carried out to the heater section of the heating roller 51 in the fixing unit 50. To coincidence, a cooling fan 72 drives mostly with this.

[0024] Thereby, first, as the arrow head A of drawing 3 and drawing 6 shows, the heat which the air inhaled from the 1st airstream inlet port 70 of the left lateral of said outside covering section 2c passes through the upper part of the fixing unit 50 mostly, and generates from the oblong fixing unit 50 is taken, and air circulates so that it may discharge from the sideways opening 78 to the right-hand side airstream outlet 74 through the inside of the stowage 73 for cooling fans. If it puts in another way, since the 1st airstream inlet port 70, the fixing unit 50, the sideways opening 78, the cooling fan 72, and the airstream outlet 74 are located in a line in the shape of about 1 straight line, the flow of air becomes very smooth and the cooling effect of the fixing unit 50 improves.

[0025] Moreover, the air inhaled from said 2nd airstream inlet port 71 which carried out opening to the rear face

of the body case 2 As the arrow head B of drawing 3 and drawing 5 R> 5 shows, it passes through the vertical part of a process unit 30 through said air hole 86 in the upper part of dashboard section 2b. the air which passed through the upper part of a process unit 30 -- the process unit 30 concerned -- it is discharged from the cooling fan 72 in the stowage 73 for cooling fans toward the sideways opening 78 of a location in the part of said airstream outlet 74 1 side (right-hand side of drawing 3 ). Therefore, since the airstream which flows in said direction of arrow-head A, and the airstream of the direction of arrow-head B do not collide in the part of most in mainframe section 2a and it is drawn in by the sideways opening 78, the heat generated from the fixing unit 50 can heighten the cooling effect in the condition of not having a bad influence on a process unit 30.

[0026] In addition, as shown in drawing 5 and drawing 8 , airstream B' which passed the lower part of a process unit 30 has the passage to the upper part prevented by the diaphragm 93 in the rear-face part of upper surface part plate 76a of said aeration duct 76, is attracted in the aeration duct 76 from an air hole 92 (refer to drawing 8 ), and is discharged from the cooling fan 72 in the stowage 73 for cooling fans through the free passage hole 77 in the part of said airstream outlet 74 (refer to drawing 6 ).

[0027] On the other hand, in the front-face side of the body case 2, since the air attracted from said notch 88 shown in drawing 8 serves as the airstream D which passes through the clearance on the top face of dashboard 2b by the inferior-surface-of-tongue side of the fixing unit 50 and is attracted in the aeration duct 76 through the inlet 89 of the front part of upper surface part plate 76a, its cooling effect improves conjointly with the adiabatic efficiency of the radiant heat which comes out of the fixing unit 50 by this upper surface part plate 76a.

[0028] Furthermore, the screening effect of the radiant heat by the heat-reflecting plate 90 stretched in the front part of upper surface part plate 76a improves further. The air inhaled from said 2nd airstream inlet port 71 which carried out opening to the rear face of the body case 2 As the arrow head C of drawing 5 shows, it passes through the circulation way by the side of the inferior surface of tongue of dashboard 2b. In accordance with the letter of abbreviation parallel, it passes to each vertical side of the low voltage power supply substrate 80 as a power supply section, the Maine substrate 81, the junction substrate 82, and the high voltage power supply substrate 83, and is discharged outside the plane through a cooling fan 72 and the airstream outlet 74 from the inferior surface of tongue in the stowage 73 for cooling fans. Therefore, substrates, such as a power supply section, are separated from each units 20, 30, and 50 of an upper part location with dashboard 2b, and they can be certainly cooled in the cooling air which passes through the circulation way by the side of the inferior surface of tongue of dashboard 2b while they do not receive the bad influence of the heat which comes out of each unit.

[0029] Furthermore, since the body case 2 is unified in synthetic-resin material in main frame section 2a, and 2d of outside covering section 2c dashboards etc. and the aeration duct 76, assembly operation is easy, and there are also few need components mark, it ends, and a manufacturing cost can be reduced.

[0030]

[Effect of the Invention] As explained above, the cooling system of the image formation equipment of invention indicated to claim 1 The process unit which has the photo conductor with which an electrostatic latent image is formed at least, and the developer which forms a toner image in this photo conductor, In the image formation equipment which comes to hold the exposure unit for forming a latent image in a photo conductor, the fixing unit which carries out heating fixing of the toner image imprinted by the form, a power supply section, and various substrates in a body case An airstream inlet port is formed in the at least 1 side of said body case, an airstream outlet is formed in a side besides a body case, and the stowage for fans for cooling is prepared near this airstream outlet. In said body case The air duct of the shape of oblong [ which is located between said process units and fixing units, and is prolonged in the passage direction of a form, and the crossing direction, and separates the arrangement section of said substrate up and down ], The septum which separates the flank of said both units and the stowage for fans for cooling is formed. It constitutes so that it may emit outside the plane from said airstream outlet through sideways opening which was made to pass through the upper part of said fixing unit, and drilled the air inhaled from said airstream inlet port in said septum, and said stowage for fans for cooling.

[0031] Therefore, the thing for which between the fixing unit which generates many heat, and the process units which are easy to receive the bad influence of the heat was separated by the aeration duct, According to the cooling effect emitted outside the plane from said airstream outlet through sideways opening which was made to pass through the upper part of said fixing unit in the shape of about 1 straight line, and drilled the air inhaled from said airstream inlet port established in the 1 side of a body case in said septum, and said stowage for fans



for cooling Hot air does not collect in a body case, but it can avoid having a bad influence on a process unit.

[0032] Moreover, invention indicated to claim 2 prepares the circulation way where the air inhaled from the airstream inlet port formed in the rear face of said body case flows in the upper part and the lower part of said process unit, respectively in the cooling system of the image formation equipment indicated to claim 1.

Therefore, since the airstream which flows along with the longitudinal direction of said fixing unit, and the airstream which flows the vertical section of a process unit do not collide in the part of most within a body case and it is drawn in by sideways opening, the heat generated from a fixing unit can heighten the cooling effect in the condition of not having a bad influence on a process unit.

[0033] And while being able to perform efficiently cooling of the heat source of the part where the locations mutually left with one cooling fan differ, the effectiveness that the installation number of a cooling fan is lessened and a manufacturing cost can also be reduced is done so. In a cooling system [ in / in invention according to claim 3 / image formation equipment according to claim 1 or 2 ] in a body case The dashboard with which the top face of each of said substrate and the lower part of said process unit are divided is formed. The air inhaled from the airstream inlet port of the rear face of said body case forms in the flat surface of each of said substrate the circulation way which flows as \*\*\*\*, and through said stowage for fans for cooling, it constitutes from this circulation way so that it may emit outside the plane from said airstream outlet.

[0034] Therefore, a power supply section and a substrate are separated from each unit of an upper part location with a dashboard, and they can be certainly cooled in the cooling air which passes through the circulation way by the side of the inferior surface of tongue of a dashboard while they do not receive the bad influence of the heat which comes out of each unit. And invention according to claim 4 is set to the cooling system in image formation equipment according to claim 3. The air which prepared the bottom plate of a wrap sake and was inhaled from the airstream inlet port of the rear face of said body case the lower part of said body case Since it constitutes so that it may flow on the circulation way from the low voltage power supply section stationed to the posterior part approach part within a body case to said substrate, and the inferior-surface-of-tongue side of a body case is closed in the bottom plate, it becomes certain forming [ of an airstream path ] it.

[0035] Furthermore, in the cooling system in image formation equipment according to claim 1 to 4, invention according to claim 5 is constituted so that the air inhaled from between the lower part of said fixing unit and the notches formed in the front face of a body case may be attracted inside an aeration duct through the inlet drilled in the front face of said air duct.

[0036] Therefore, in the front-face side of a body case, since the air attracted from said notch serves as airstream which passes through the clearance on the top face of a dashboard by the inferior-surface-of-tongue side of a fixing unit and is attracted in an aeration duct through the inlet of the front part of an aeration duct, it does so the effectiveness that the cooling effect improves conjointly with the adiabatic efficiency of the radiant heat which comes out of the fixing unit by this aeration duct.

[0037] In a cooling system [ in / in invention according to claim 6 / image formation equipment according to claim 1 to 5 ] in the rear face of said aeration duct Drill an air hole in the lower approach part, and the diaphragm which divides the clearance between the front face of said process unit and the rear face of an aeration duct up and down in the upper part [ air hole / this ] is arranged. The air inhaled from the airstream inlet port of the rear face of said body case is constituted so that it may be drawn in inside an aeration duct.

[0038] Therefore, the airstream which has passed through the top face of a process unit, and the airstream which has passed the bottom do not join near the fixing unit part which becomes near the high temperature generation source, but an air distribution channel is tidied up, and the effectiveness that the cooling effect improves is done so. Invention according to claim 7 stretches the heat-reflecting plate for intercepting the radiant heat from a fixing unit in the front face of said aeration duct in the cooling system in image formation equipment according to claim 1 to 6. Therefore, the radiant heat from a fixing unit does so the effectiveness that heat transfer to the direction of a process unit can prevent certainly conjointly with existence of said aeration duct.

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[Translation done.]

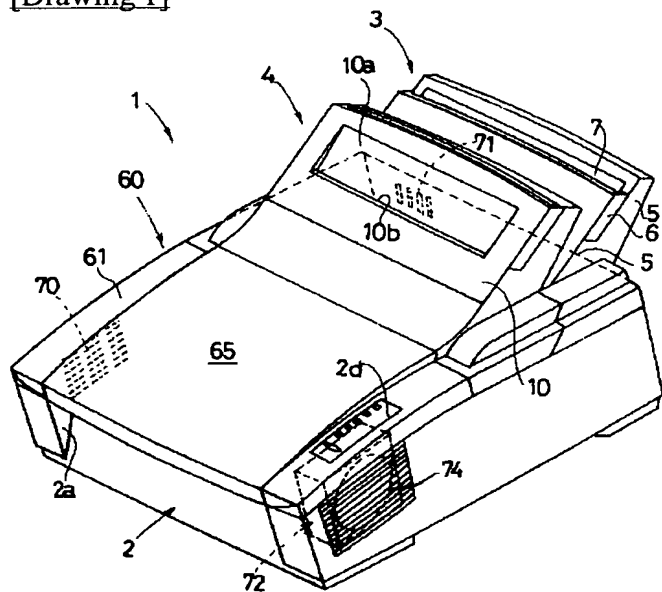
## \* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

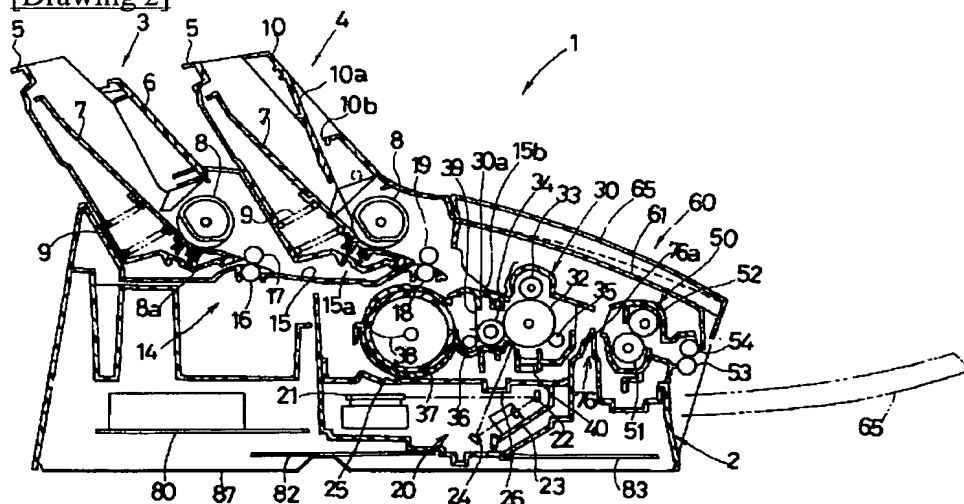
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

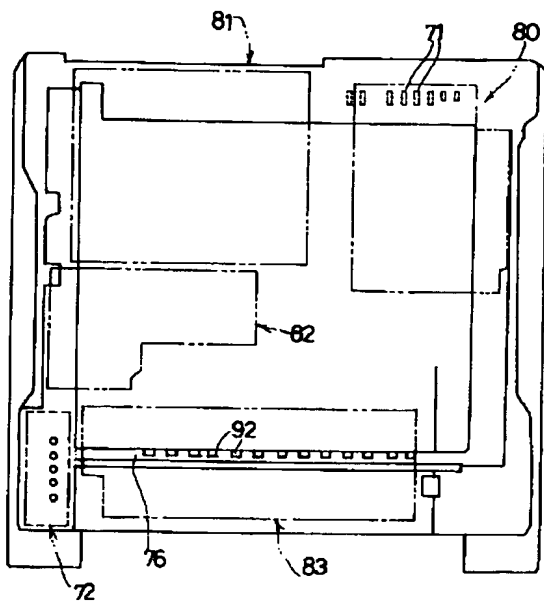
[Drawing 1]



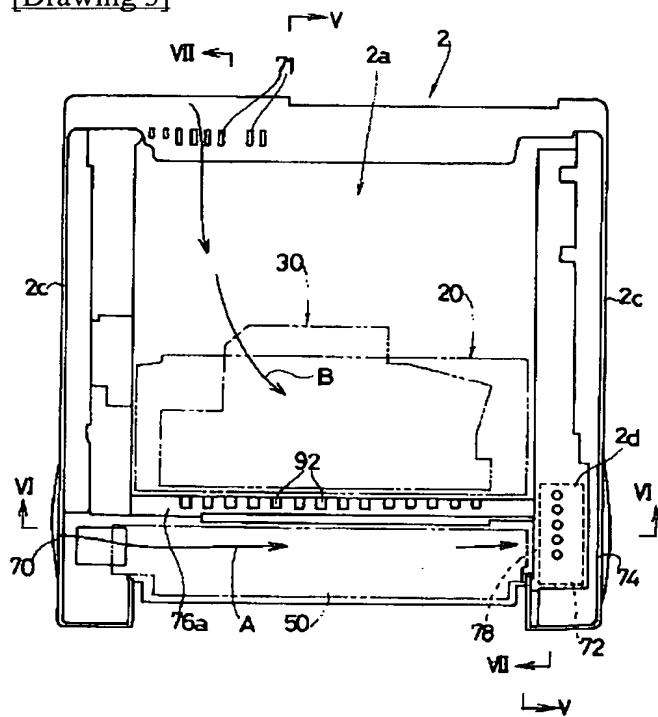
[Drawing 2]



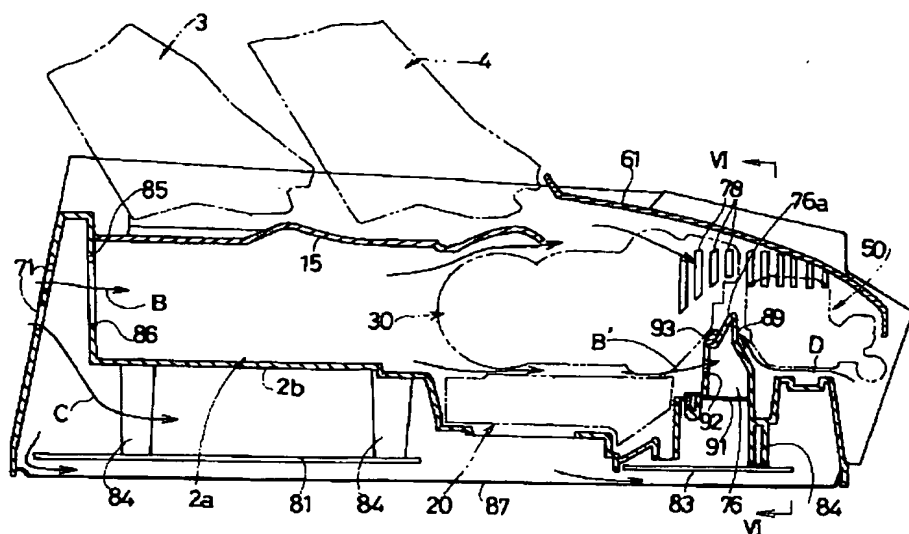
[Drawing 4]



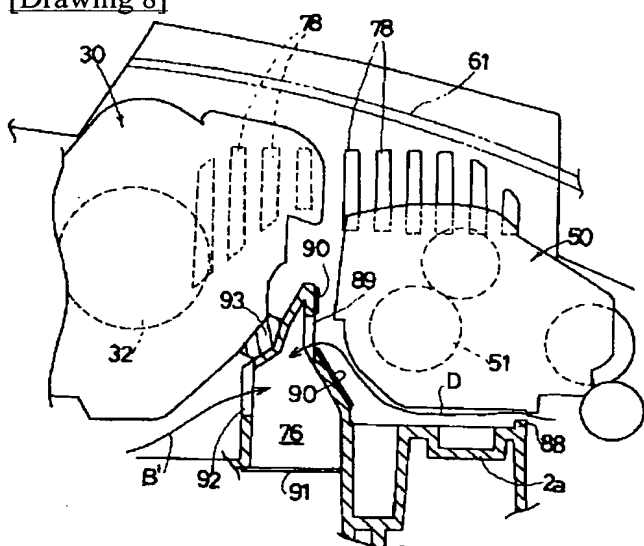
[Drawing 3]



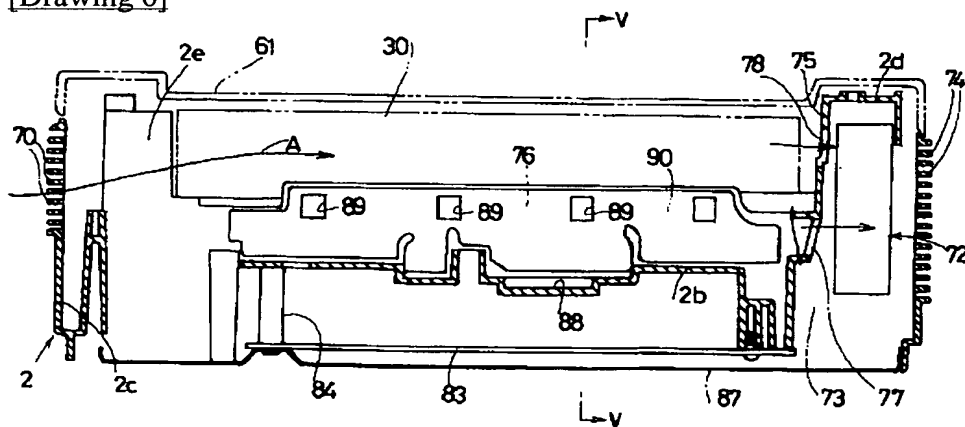
[Drawing 5]



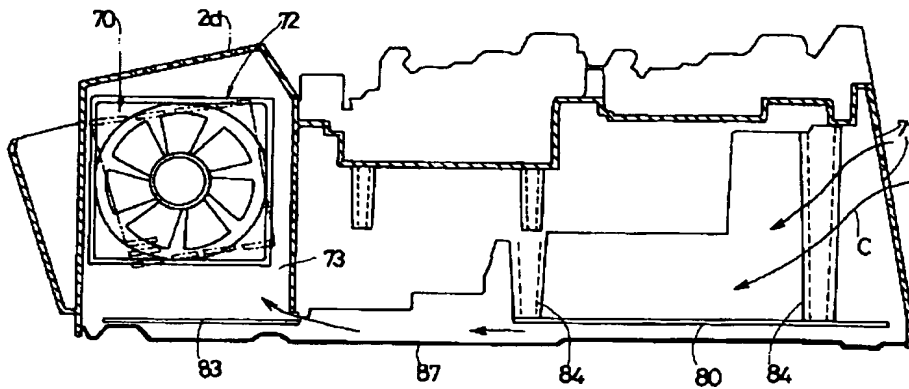
[Drawing 8]



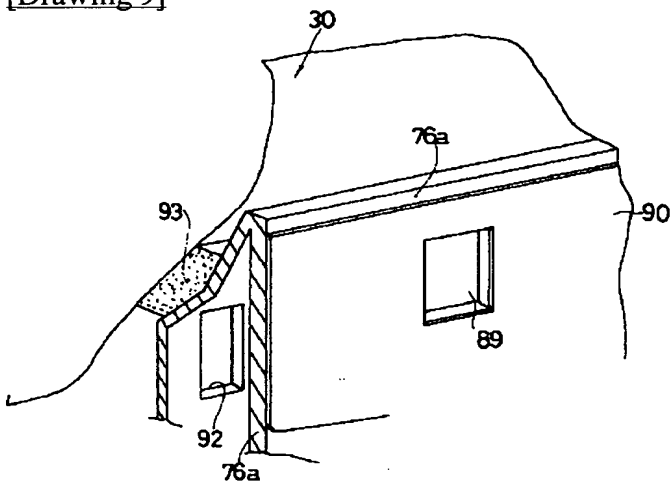
[Drawing 6]



[Drawing 7]



[Drawing 9]



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[Translation done.]